ORD TECHNICAL SUPPORT CENTERS – QUARTERLY REPORT SUMMARY

Q4 FY17

ORD's Technical Support Centers (TSCs) play a critical role in the Agency's work to protect the environment and public health by responding to requests for technical assistance from EPA's program offices and regions at Superfund, Resource Conservation & Recovery Act (RCRA), and Brownfield sites. This quarter, ORD's five TSCs provided technical support at more than **47 Superfund sites and 2 Non-Superfund contaminated sites**, responding to **requests from all 10 regions** and in more than **24 U.S. states and Puerto Rico**.

The majority of TSC support to EPA's regions during this quarter involved reviewing sampling plans and remediation designs and providing technical advice. Most of the technical support requests from this quarter were related to former industrial/chemical facilities, military bases or non-site specific issues.

Highlights from Q4 FY17 (July – September 2017):

Technical support to Region 6 for the Hurricane Harvey response in Houston, TX:

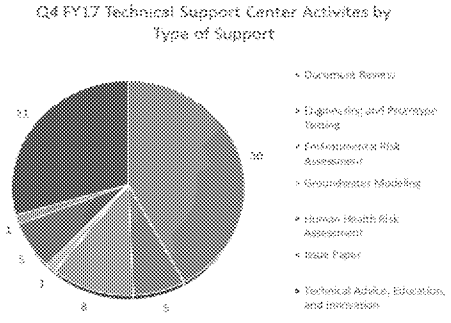
- ORD's Superfund Health Risk Technical Support Center (STSC) searched for toxicity values for 16 chemicals associated with Region 6's Hurricane Harvey response. The STSC also provided clarification on the scientific basis for the residential soil removal level for Endosulfan. These requests allowed the Region to better prepare for clean-up following the disaster.

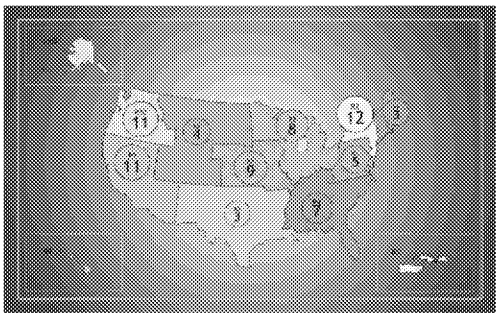
Technical support at the Newtown Creek Site in New York, NY:

- ORD's Site Characterization and Monitoring TSC (SCMTSC) reviewed data calculations establishing remediation goals for sediments at the site and recommended additional tests and data analysis be conducted on the outlier data from the background sampling. Statistically correct data analysis will provide risk-based clean-up numbers that ensure the protection of human health and the environment.

Evaluating dredging options to clear a lake in Fredericktown, MO of migrated mine tailings:

- ORD's Engineering TSC (ETSC) is working with Region 7 to evaluate various dredging options and a suitable management location for mine tailings that have migrated to a lake at the Madison County Mining superfund site. ETSC activities include developing a Site Conceptual Model (SCM) for existing exposure pathways, determining the amount of mine tailings that must be dredged, finding a suitable location and containment design for dewatering and identifying a disposal location for the dredged sediment/tailings to minimize future exposure concerns. A geophysical survey of the various disposal site options is being performed to minimize contamination of ground water by subsurface fractures.





ORD's regional Superfund and Technology Liaisons (STLs) provide links between Superfund site managers and ORD's five specialized TSCs. This report provides details of significant technical support requests, while omitting the less noteworthy technical support items

December 2017

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Acronyms

CSM	Conceptual Site Model
DASEES	Decision Analyses for a Sustainable Environment, Economy, and Society
DNAPL	Dense Non-Aqueous Phase Liquid
EPC	Exposure Point Concentrations
EPNG	El Paso Natural Gas
ERT	Emergency Response Team
FS	Feasibility Study
GWTSC	Groundwater Technical Support Center
NCEA	National Center for Environmental Assessment
NRMRL	National Risk Management Research Laboratory
OLEM	Office of Land and Emergency Management
OSP	ORD's Office of Science Policy
PAH	Polycyclic Aromatic Hydrocarbons
PCB	Polychlorinated biphenyl
PFAS	Poly- and Perfluoroalkyl Substance
PPRTV	Provisional Peer-Reviewed Toxicity Value
PRP	Potentially Responsible Party
RCRA	Resource Conservation and Recovery Act
RI	Remedial Investigation
ROD	Record of Decision
RPM	Remedial Project Manager
SCMTSC	Site Characterization and Monitoring Technical Support Center
STL	Superfund and Technology Liaison
SVE	Soil Vapor Extraction
TPH	Total Petroleum Hydrocarbons
USGS	U.S. Geological Survey (Dept. of Interior)
VOC	Volatile Organic Chemical

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Program / Regional Office	Site Name	Program / Regional Office Contact	Technical Support Center	Center Contact	Center Contact Phone	Requestor	Request Date	Status	City	State	Support Type	Description
Multi-Region (2, 5, 7)	Matching TPH GRO/DRO Field Data with Risk Assessment TPH Fractionation and Post-Sampling Reconciliation of Data with Risk Values	Chuck Maurice (R5)	Engineering	Ed Barth / John McKernan	513-569-7415	Chuck Maurice (R5)	5/23/2017	In Progress	N/A	N/A	Issue paper	Regions 2, 5, and 7 are interested in determining a science driven strategy to subdivide total petroleum hydrocarbons (TPH) found at contaminated sites into fractions that indicate the origins of the specific carbon (C) components in the TPH.
OSWER/OSRTI-ERT [Region 2]		Marc Greenberg	Ecological Risk Assessment	Mike Kravitz	513-569-7740	Marc Greenberg (OSWER/OSRTI-ERT [R02]) Katie Matta (R03) Bruce Pluta (R03) Carolyn Bury (R05) Bruce Duncan (R10)	10/5/2017	In Progress			Environmental Risk Assessment	Question: "Should we incorporate climate change issues in ecological risk assessments of contaminated sites?" Response Document Title: Climate Change Issues In Ecological Risk Assessments at Hazardous Waste Sites. Status Update: Response document is in initial stage of development.
Region 01	Centredale	Melissa Taylor, Anna Krasko	Site Characterization and Monitoring	Jan Szaro	617-918-1316	Region 01	8/28/2017	In Progress	North Providence	RI	Document Review	SCMTSC was requested by Region 1 to provide review of appropriate site documents from the Centredale ROD Administrative Record related to the Baseline Human Health Risk Assessment (BHHRA) as they evaluate sediment cleanup levels due to fish consumption risk, identifying original sources of support for EPA's assumptions in the Administrative Record, and providing sensitivity analyses through performing risk calculations to determine various fish ingestion rates and associated risk and associated cleanup levels. Additional assistance with evaluating impact of groundwater contamination in the Source Area and the current groundwater classification in the selected remedy in the ROD may also be needed.
Region 01	Newport Naval Education & Training Center Superfund Site	Jan Szaro	Engineering	Ed Barth / John McKernan	513-569-7415	Jan Szaro	1/6/2016	In Progress	Newport	RI	Technical Advice, Education & Innovation	ORD provided technical support for a U.S. Navy sampling event at the Defense Fuel Support Point (DFSP) of the Newport Naval Education & Training Center Superfund Site
Region 01	Prototype Septic Sensor Verification	Jason Turgeon, Region 1/ Maggie Theroux, ORD	Site Characterization and Monitoring	Jan Szaro	617-918-1316	Region 01 / ORD	7/19/2017	In Progress	NA	NA	Engineering and Prototype Testing	In early 2017, EPA, in partnership with The Nature Conservancy, the USGS and others, launched the "Advanced Septic System Nitrogen Sensor Challenge" to spur the development and design of a low-cost nitrogen sensor package which could measure and monitor the performance of advanced nitrogen removal septic systems. There are a number of both proprietary and non-proprietary advanced onsite treatment technologies commercially available. However, to EPA's knowledge a nitrogen sensor package that can be used in conjunction with these advanced nitrogen removal septic systems is not currently commercially available. Phase I winning designs were announced at the June 2017 Sensor Showcase Day event. Region 1 and the EPA ORD partnership team was awarded ORD funding for a Regional/State Innovation Project to support Phase II: Prototype Performance Testing. Phase II will support the screening, development, and testing of prototypes. The partnership team requested technical assistance from the SCMTSC in developing and implementing the verification protocols and testing of the sensors.

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Region 02	A.O. Polymer Superfund Site	Brittany Hotzler	Groundwater	David Burden	580-436-8606	Diana Cutt	6/5/2017	Completed	Sparta	NJ	Document Review	Dr. Eva Davis provided technical review comments on the "Preliminary Design for Thermal Enhancement to the Soil Vapor Extraction System" at the A.O. Polymer Superfund Site located in Sparta, New Jersey. She suggested that the treatment system startup be initiated during a warmer time of the year to avoid problems with reaching target temperatures and made recommendations on ways to improve the system performance monitoring. Dr. Davis' review will allow the agency to ensure the remediation system design is optimal and will operate to restore the site in order protect human health and the environment.
Region 02	Atlantic Fleet Weapons Training Area	Mike Sivak	Site Characterization and Monitoring	Felicia Barnett	404-562-8659	Diana Cutt	7/11/2017	Completed	Vieques	PR	Document Review	The Region requested SCMTSC support in reviewing the Remedial Investigation (RI) for the Vieques Federal Facility Unexploded Ordinance Area (UXO) 16, OU1 (the water off of SWMU 4). The Navy collected background sediment samples and derived summary statistics from the data set to compare with onsite data from the offshore sediments. Comments were provided on 7/24/17. ORD's review will assist the region in selecting the best remedy at the site in order to protect human health and the environment.
Region 02	Dupont Pompton Lakes	Chloe Metz	SCMTSC	Felicia Barnett		Diana Cutt	10/23/2017	Completed	Pompton Lakes	NJ	Document Review	ORD reviewed the statistical approach used by the PRP for establishing site-specific remediation standards for arsenic in background soils. This review will allow the region to establish appropriate background concentrations so that the remedy will be protective of human health and the environment.
Region 02	Naval Weapons Station Earle (Site A)	Marian Olsen	Superfund Health Risk Assessment	Teresa Shannon	513-569-7596	Marian Olsen, Re	9/19/2017	On-Going	Colts Neck	NJ	Human Health Risk Assessment	Received request for existing Appendix values in the Thallium PPRTV or for an update. Also inquired whether the final decision would be made by risk assessment or risk management. Responded that we are currently examining the potential for updating the PPRTV for Thallium and Thallium Soluble Salts and that the potential use of the current Appendix screening value for Thallium would be a risk management decision. Official response sent to requestor 9/22/17.
Region 02	Newtown Creek	Caroline Kwan / Mark Schmidt	Site Characterization and Monitoring	Felicia Barnett	404-562-8659	Diana Cutt	9/11/2017	Completed	New York	NY	Document Review	SCMTSC was requested to review site Background Threshold Values (BTV) calculations and provide comments on the technical process used to calculate the BTVs for sediments. Comments and recommendations were supplied on 9/25/17 The calculations use existing background surface sediment data. The process used to determine potential BTVs includes distributional analysis of the background sample data, outlier testing, data comparison testing, and BTV calculation and evaluation. the Region will use the BTVs in determining risk for the site.
Region 02	No site	Marian Olsen	Superfund Health Risk Assessment	Teresa Shannon	513-569-7596	Marian Olsen, Re	8/28/2017	On-Going	NA	NA	Human Health Risk Assessment	Request for information regarding whether Chloroform was being examined as a possible PPRTV (or another department was examining the chemical). Requestor stated it was not listed on the IRIS list. On-Going.
Region 02	Pierson's Creek / Troy	Pam Tames	Engineering	Ed Barth / John McKernan	513-569-7415	Diana Cutt	5/16/2017	In Progress	Newark	NJ	Document Review	Delivered comments on applicable technologies for Hg, PCBs, VOCs
Region 02	Ringwood Mines	Diana Cutt	Groundwater	Dave Burden		Diana Cutt	9/25/2017	Ongoing	Ringwood	NJ	Document Review	In response to Ford Motor Company's recent investigative activities with respect to soil and groundwater contamination associated with the Ringwood Mines Superfund Site, and more particularly the recent detection of 1,4-dioxane, the NJ Water Commission retained a consultant to assess the effectiveness of the proposed remedial plans for the Superfund Site and the risk of contaminants, including 1,4-dioxane, to impact the Wanaque Reservoir and finished water quality. Ford Motor company's consultant then conducted a modeling effort to assess potential 1,4-dioxane transport at the site. GWTSC reviewed model and met with PRP.

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Region 02	Vo-Toys	David Rosoff	Site Characterization and Monitoring	Felicia Barnett / Jan Szaro	404-562-8649 / 617-918-1316	Dave Rosoff	8/10/2017	On-Going	Harrison	NJ	Technical Advice, Education & Innovation	The Vo-Toys site was an industrial complex dating from the early 1900s in which a number of the companies used mercury in their work processes. Developers want to rebuild into residential units but Buildings A, B, C - an entire city block - are all contaminated with elevated levels of mercury vapor. Therefore work has stopped and the buildings are vacant now. Region 2 is looking into building removal because of the concern for mercury exposure if the buildings burn. The SCMTSC is working with the ETSC to perform a two phase study approach to assist the Region in determining the risk from a building wide fire. The ETSC and the SCMTSC will develop model input refinement and ambient exposure modelling during a combustion release to assist in determining the potential risk from the site to neighboring communities if a fire should occur.
Region 02	Vo-Toys	David Rosoff	Engineering	Ed Barth / John McKernan	513-569-7415	Felicia Barnette	6/20/2017	In Progress	Harrison	NJ	Document Review	Region 2 EPA looking into building removal because of the concern for mercury exposure if the building catches on fire. Indoor vapor studies have been performed with some Hg beads found and exceedance of residential screening levels on every floor. Region 2 and ORD believe that a two phase study approach is warranted, with the first phase covering model input refinement and the second phase involving ambient exposure modelling during a combustion release.
Region 03	Clearview Landfill	Joshua Barber	Site Characterization and Monitoring	Chris Sibert and Dale Werkema	702-798-2234	Region 03	9/24/2014	Completed	Delaware and Philadelphia Counties	PA	Technical Advice, Education & Innovation	SCMTSC provided support on investigating groundwater/ surface water interactions/discharges at the site . SCMTSC staff worked with USGS-Storrs to see about providing possible support in locating potential/probable groundwater seeps into the river using distributed temperature sensing (DTS). This included field data collection, data processing, interpretation and reporting. The RPM will consider instrumenting the site if funds allow for a long term geophysical monitoring of remediation processes and site dynamics as it would influence contamination fate and transport and remediation effectiveness. Determining the groundwater/surface water interactions will assist in the site ecological evaluation and possibly assist in determining the effectiveness of the remedy.
Region 03	Indian Head Naval Surface Warfare Center	Martin Gehlhaus	Site Characterization and Monitoring	Felicia Barnett	404-562-8659	Region 03	7/13/2017	Completed	Charles County	MD	Document Review	SCMTSC provided technical review on 7/28/17 of the Navy's calculations to determine Background Threshold Values (BTVs) at the site. Region 2 has been working with the Navy to calculate BTVs, and the calculation of BTVs based on 95% USLs for the site were provided for review.
Region 03	INDIAN HEAD NAVAL SURFACE WARFARE CENTER	Jonathan Essoka	Engineering	Ed Barth / John McKernan	513-569-7415	Jonathan Essoka	7/21/2017	In Progress	Indian Head	MD	Technical Advice, Education & Innovation	Reviewing the Navy installation's use of the population partitioning method for calculating Background Threshold Values
Region 03	No site	Michele Burgess	Superfund Health Risk Assessment	Teresa Shannon	513-569-7596	Michele Burgess,	9/2/2017	On-Going	NA	NA	Human Health Risk Assessment	Request submitted for 16 chemicals associated with Region 6's Hurricane Harvey. Request originally from EOC Environmental Unit (David Charters). An extensive toxicity search was conducted and official response sent to requestor 9/6/17. On-Going.

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Region 03		Bruce Pluta and Katie Ma	Ecological Risk Assessment	Mike Kravitz	513-569-7740	Marc Greenberg (OSWER/OSRTI-ERT [R02]) Katie Matta (R03) Bruce Pluta (R03) Carolyn Bury (R05) Bruce Duncan (R10)	10/5/2017	In Progress			Environmental Risk Assessment	Question: "Should we incorporate climate change issues in ecological risk assessments of contaminated sites?" Response Document Title: Climate Change Issues In Ecological Risk Assessments at Hazardous Waste Sites. Status Update: Response document is in initial stage of development.
Region 04	B.F. Goodrich	Brad Jackson	Site Characterization and Monitoring	Felicia Barnett/ Jan Szaro	404-562-8659/ 617-918-1316	Region 04	2/25/2017	In Progress	Calvert City	KY	Technical Advice, Education & Innovation	SCMTSC has previously provided the following support to the B.F. Goodrich site in 2015: a Final Remedial Investigation (RI) Report, Human Health Risk Assessment (HHRA) and Ecological Risk Assessment (ERA). In 2016, SCMTSC created a 3-D model of the subsurface contamination to visually clarify where contamination is entering the Tennessee River, Phase II sampling maps for continuation of the offshore investigation near the river were prepared, and additional sampling effort under the Tennessee River was conducted in mid-October 2016. Sampling was completed, models and maps were updated after a meeting in Kentucky the second week in December 2016. After discussions with the State, the PRPs and OLEM, Region 4 is proceeding with the drafting and finalization of the feasibility study for the site. SCMTSC will be preparing the Feasibility Study to develop and document the remediation options and assist in determining the remedial actions to be performed.
Region 04	Epsom Salt / Mercury in concrete remediation research project	David Andrews	Site Characterization and Monitoring	Felicia Barnett/ Jan Szaro	404-562-8659/ 617-918-1316	Region 04	6/29/2017	On-Going	NA	NA	Engineering and Prototype Testing	Region 4 is performing an ORD OSP supported applied research project on the use of magnesium sulfate (Epsom Salt) solution in mercury spill mitigation. The study involves the application of Epsom Salt solution after gross removal of elemental mercury to mitigate residual mercury contamination on concrete surfaces to reduce mercury vapors within work or residential air spaces to below risk-based concentrations. The Region has requested assistance with the very specific mercury speciation analysis required to perform the study and review comments on the study project plan.

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Region 04	Holcomb Creosote Company Superfund Site	Joseph Alfano	Groundwater	David Burden	580-436-8606	Region 04	6/15/2017	Completed	Yadkinville	NC	Document Review	Dr. David Burden (GWTSC) and Dr. Ed Barth (ETSC) provided comments concerning remedial options at the Holcomb Creosote Company Superfund Site located in Yadkinville, NC. In general, removal of hotspots of contaminated soils and sediments, with capping for areas of low-contaminant concentrations located in terrain suitable for capping, appears to be a viable approach for remediation of site soils and sediments. Solidification/Stabilization (S/S), whether in-situ or ex-situ, if considered most likely would require addition of activated carbon and organoclays in the formulation in order to stabilize the hydrocarbon contaminants. Ex-situ, LTTD might be promising as part of a treatment train if the moisture content is low. Biological treatment, including use of co-metabolites, has (at least in laboratory studies) been shown to be capable of degrading higher molecular weight (i.e., 3 or more aromatic rings) polynuclear aromatic hydrocarbons (PAHs), including possibly BaP (Kanaly and Harayama 2000). Lastly, in situ chemical oxidation might oxidize lower ring structures as well, but implementation of an effective delivery system may prove difficult. For groundwater, removal and/or control of source materials at the site is of the greatest concern, since groundwater will continue to be contaminated until the source materials are removed.
Region 04	Holcomb Cresote, GA	Joseph Alphonso	Engineering	Ed Barth / John McKernan	513-569-7415	Joseph Alphonso	6/17/2017	In Progress	Yadkinville	GA	Document Review	ETSC and GWTSC provided reviews of Feasability Study.
Region 04	LCP Chemical Mercury Cell Building	Galo Jackson	Site Characterization and Monitoring	Felicia Barnett/ Jan Szaro	404-562-8659/ 617-918-1316	Region 04	2/29/17	In Progress	Brunswick	GA	Document Review	Region 4 requested support to characterize elemental mercury contamination at the Mercury Cell Building. The building area is located in the upland area of the 813 acre site. The remainder of the site consists primarily of tidal marsh. Facilities operating at the overall site have included an oil refinery, a paint manufacturing company, a power plant and a chlor-alkali plant. The SCMTSC reviewed various investigation reports and subsurface analytical data provided to recommend the development of a Conceptual Site Model (CSM) for the area. The PRPs have agreed to develop a CSM, and the SCMTSC will provide review comments to assist in determining a cost effective remediation option for the contamination.
Region 04	Terry Creek Dredge Spoil Area/Hercules Outfall	Kevin Koporec	Superfund Health Risk Assessment	Teresa Shannon	513-569-7596	Daniel Parshley, (	7/13/2017	On-Going	Brunswick	GA	Human Health Risk Assessment	Director Owens forwarded email originally sent to Mary Ross. Requestor looking for contact manager for the Toxaphene chemical assessment. Information forwarded to requestor, currently waiting on completion of Toxaphene PPRTV. On-Going.
Region 04		Glenn Adams and Sharon	Ecological Risk Assessment	Mike Kravitz	513-569-7740	Sharon Thoms (R04) Glenn Adams (R04) Bruce Duncan (R10)	10/5/2017	On-Going			Environmental Risk Assessment	Question: "Geochemical Evaluations–Statistics or no Statistics?" Response Document Title: Separating Anthropogenic Metals Contamination from Background: A Critical Review of Geochemical Evaluations and Proposal of Alternative Methodology. Status Update: Response document is in final preparation (i.e., External peer review was completed; comments are being addressed).

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Region 05	Enterprise Todhunter	Michael Mikulka, Thomas Krueger, Gary Steinbauer	Site Characterization and Monitoring	Chris Sibert/ Dale Werkema	702-798-2234	Region 05 and OH EPA	8/1/2013	On-Going	Middletown	OH	Technical Advice, Education & Innovation	SCMTSC is providing ongoing geophysical technical support to subsurface investigations seeking to understand explosive gas migration from natural gas storage facility. Gas leaks were detected 1 mile north of the facility at a neighboring landfill property. Review of Geophysical Survey Bedrock Surface, Weathering Zone, and Sand Lens Mapping Report" prepared by Environscan, Inc. at the Todhunter Gas Storage Site. Site investigations, review, and technical involvement are ongoing as detection and clean up activities continue. Dale Werkema (ORN-NERL) visited the site in Sept 2015 for an on-site stakeholder meeting. Per his recommendation, predictive model is being performed to guide 2016 field investigations as flare wells continue to burn and the gas needs to be found and extracted as soon as possible to protect human health and the environment. 2016 field work has commenced which includes an extensive seismic investigation. This seismic investigation was developed with consultation and advice from Dale Werkema. Dale is also providing active and ongoing oversight while the data being collected for lead OH EPA. Reviw of a data report is undeway as of 9/26/2017.
Region 05	Hartford Petroleum Release Site	Chuck Maurice	Engineering	Ed Barth / John McKernan	513-569-7415	Chuck Maurice	5/23/2017	In Progress	Hartford	IL	Document Review	Evaluated each of the five remedial action objectives, the associated remedial goals, and the performance metrics proposed for use at this site.
Region 05	NIPSCO (non-SF)	Michelle Kayson	Engineering	Ed Barth / John McKernan	513-569-7415	Michelle Kayson	9/14/2017	In Progress	Michigan City	IN	Document Review	Coal combustion residue was placed in a semi-wetland area on the site that may migrate to adjoining Lake Michigan beach areas. Some form of containment options, including in-situ solidification/stabilization, with effective barrier technology, is being considered.
Region 05	North Pier Vapors, MI	Katherine Thomas	Engineering	Ed Barth / John McKernan	513-569-7415	Katherine Thomas	6/20/2017	In Progress	Benton Harbor	MI	Document Review	Delivered comments on reports assessing whether the vapor barrier and installation plan selected by a PRP was appropriate given the contamination on site.
Region 05	Pilsen Site	Ramon Mendoza	Site Characterization and Monitoring	Chris Sibert/ John Zimmerman	702-798-2234	Region 05	11/5/2015	On-Going	Chicago	IL	Technical Advice, Education & Innovation	R5 is initiating a Removal Site Evaluation in the Pilsen Neighborhood in Chicago. One objective is to determine the industrial sources of lead contamination where multiple PRP's exist. SCMTSC is providing scientific advice and serving as QA/QC for the lab contracted by R5 to perform SEM/EDS analysis. NERL Las Vegas is reviewing initial laboratory results from the contract lab and providing written comments.
Region 05	Subsurface smoldering in landfills	Chuck Maurice	Engineering	Ed Barth / John McKernan	513-569-7415	Chuck Maurice	9/20/2017	In Progress	Chicago	IL	Engineering and Prototype Testing	Evaluation of subsurface event mecanisms in municipal solid waste sites in OH

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Program / Regional Office	Site Name	Program / Regional Office Contact	Technical Support Center	Center Contact	Center Contact Phone	Requestor	Request Date	Status	City	State	Support Type	Description
Region 06	Arkwood Superfund Site	Stephen Tzhone	Groundwater	David Burden	580-436-8606	Region 06	7/5/2017	Completed	Omaha	AR	Document Review	Dr. Scott Huling provided technical review comments to RPM Stephen L. Tzhone on the document titled, "Arkwood, Inc., Superfund Site, EPA Comments on Supplemental High Flow Groundwater Tracing Study Work Plan dated February 2016." In an effort to determine the long-term protectiveness of the groundwater remedy, the 2016 Five Year Review (FYR) recommended a groundwater investigation to assess whether New Cricket Spring captures all of the contaminated groundwater discharging from the site. In the 4th FYR (September, 2016), regarding the remedy performance issues, it was reported that the long-term protectiveness of the groundwater remedy needs to be verified to determine if contaminated soils are contributing to the groundwater contamination, and if New Cricket Spring captures all of the contaminated groundwater. The recommendation in the FYR was to conduct a contaminant fate and transport investigation to determine if New Cricket Spring captures all the contaminated groundwater and there is no colloidal transport of dioxin. It was reported that the tracer test work plan is "to determine if residual COC in the vicinity of the former sinkhole can migrate to points other than New Cricket Spring under high flow conditions." This objective does not appear to acknowledge that pentachlorophenol (PCP) groundwater contamination exists in other areas of the site.
Region 06	Tar Creek	Katrina Coltrain	Site Characterization and Monitoring	Chris Sibert/ Dale Werkema	702-798-2234	Region 06	11/16/2016	In Progress	Miami	OK	Technical Advice, Education & Innovation	The SCMTSC is working with the GWTSC to assist the Site Remedial Project Manager to better understand the groundwater-to-surface water interactions at the site. The goal is to provide a more efficient cleanup strategy that uses fewer Superfund dollars while also delivering better community protectiveness. A Tar Creek Site visit for all the parties occurred the week of January 18, 2017. The visit included stops at three locations of interest to observe whether the thermal imaging will be useful in identifying area or potential ground water discharge. Recommendations will be made on possible remediation technologies to be evaluated in the Feasibility Study (FS) based on the site visit and coordination between the team members.
Region 06	Wilcox Oil Company	Katrina Coltrain	Site Characterization and Monitoring	Chris Sibert/ Dale Werkema	702-798-2234	Region 06	6/5/2015	Completed	Bristow	OK	Document Review	SCMTSC provided development and review support for site plans and reports being prepared with the EPA ERT team to complete geophysical investigations followed by a direct sensing investigation. The geophysical investigation will include Ground Penetrating Radar, electromagnetic, and seismic. The direct sensing investigations will be based on the findings of the geophysical investigation and will be coupled with geoprobe sampling, piezometer installation, and field testing. The long range plan is to use this information to develop a focused FSP and FS.
Region 07	Federal Mine Tailings (Doe Run)	Jason Gunter	Engineering	Ed Barth / John McKernan	513-569-7415	Jason Gunter	7/15/2017	In Progress	St. Francois	MO	Document Review	Design plan review for Tailings Impoundments delivered.

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Region 07	Fredericktown Lake Monitoring and Modeling	Kurt Limesand	Engineering	Ed Barth / John McKernan	513-569-7415	Kurt Limesand	7/14/2017	In Progress	Fredericktown	MO	Engineering and Prototype Testing	1. Evaluate existing data including the site history, meteorological records, light detection and ranging (LiDAR) and digital elevation model (DEM) data, watershed hydrology, existing sediment and water monitoring records and other available data. 2. Identify data gaps and recommend future sampling/analyses. 3. Develop a Conceptual Site Model (CSM) to identify the primary management questions for the site. 4. Compile available data in the EPA Better Assessment Science Integrating Point and Nonpoint Sources (BASINS) geographic information system (GIS) framework. 5. Develop a numerical watershed model of the Lake to investigate water flow during typical and extreme rainfall events using Hydrological Simulation Program - FORTRAN (HSPF).
Region 07	Hastings Groundwater Contamination-OU12, Second Street Subsite	Laura Price	Groundwater	David Burden	580-436-8606	Region 07	7/10/2017	Completed	Hastings	NE	Document Review	Dr. Eva Davis reveiwed the "Draft Supplemental Feasibility Study for Second Street Subsite, Operable Unit 12" (OU12), located in Hastings, Nebraska. The purpose of the Draft Supplemental Feasibility Study (FS) was to evaluate in situ thermal remediation for the Second Street Subsite, and compare it to in situ chemical oxidation (ISCO), which was the favored alternative in the 2006 FS. The primary goal of the OU 12 remediation will be to protect groundwater. This is consistent with Section 1.6 of the supplemental FS, which states that the primary risk remaining at this site is that the contaminated soils serve as a continuing source of groundwater contamination.
Region 07	Ogallala Ground Water Contamination	Susan Fisher	Engineering	Ed Barth / John McKernan	513-569-7415	Susan Fisher	8/31/2017	In Progress	Ogallala	NE	Technical Advice, Education & Innovation	The purpose of this technical directive (TD) is to assist Region 7 (Kansas City office) on trichloroethylene (TCE) compound-specific isotope analysis (CSIA) at the U.S. Recycling and Ogallala Ground Water Superfund site in Ogallala, Nebraska. Under this TD, RTI will develop a Quality Assurance Project Plan (QAPP; Task 1) and conduct analyses of water samples collected in collaboration with the USGS and EPA Region 7.
Region 07	PCE Southeast Contamination Superfund Site	Bo Hull	Groundwater	David Burden	580-436-8606	Region 07	4/19/2017	On-Going	York	NE	Groundwater Modeling	The GWTSC under the direction of Dr. David Burden developed an initial groundwater flow and transport model for the PCE Southeast Contamination Superfund Site located in York, NE. A groundwater flow model was requested to be developed first, with the capability to add contaminant transport at a later date.
Region 07	Technical Support for Compass Plaza Ground Water Contamination	Devin Pollock	Engineering	Ed Barth / John McKernan	513-569-7415	Devin Pollock	7/1/2017	In Progress	Compass Plaza	MO	Technical Advice, Education & Innovation	The purpose of this TD is to assist Region 7 (Kansas City office) on trichloroethylene (TCE) compound-specific isotope analysis (CSIA) at the Compass Plaza Ground Water Superfund site.
Region 07	Westlake Landfill	Brad Vann, Tom Mahler	Site Characterization and Monitoring	Felicia Barnett	404-562-8659	Region 07	2/10/2015 9/15/16	In Progress	Bridgeton	MO	Document Review	SCMTSC developed a sampling plan for the outer area of the landfill using spatial statistical methods. The statistically valid sampling plan was used to assist in determining the extent of contamination outside the landfill. Now that the sampling is complete the SCMTSC has been asked to review the data and reports as written by potentially responsible parties, to determine key elements of these documents related to statistical analysis and that the statistically developed findings are supported by the site data. The PRPs have provided additional information regarding their input files for the use of ProUCL and the Region has met with the PRPs and has provided the data the was used to calculate exposure point concentrations (EPCs). The SCMTSC will be reviewing the PRPs use of ProUCL and providing any input or comments on the data sets that were used to generate these EPCs. Additionally the SCMTSC will be providing support to the Region in developing comments related to available data that was not utilized in the draft document. This will support Region 7 on how to direct the PRPs to account for this data. The EPCs will be used to determine remediation areas.

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Region 07		Venessa Madden	Ecological Risk Assessment	Mike Kravitz	513-569-7740	Venessa Madden	10/5/2017	On-Going			Environmental Risk Assessment	Question: "What is the appropriate use of allometric scaling in ecological risk assessments?" Response Document Title: Body-Weight Scaling of Acute and Chronic Toxicity: Comparison of Health and Wildlife Perspectives, and Proposal for Refinement of Terrestrial Wildlife Assessments. Status Update: Internal peer review was completed. Comments have been addressed and External Review Draft is being prepared.
Region 08	BNSF: Flat Rock	Roger Hoogerheide	Engineering	Ed Barth / John McKernan	513-569-7415	Roger Hoogerheide	8/2/2017	In Progress	Flat Rock	MT	Document Review	DNAPL reports and erosion control reports reveiwed.
Region 08	Globeville Outfall, CO	Dania Zinner	Engineering	Ed Barth / John McKernan	513-569-7415	Dania Zinner	8/20/2017	In Progress	Globeville	CO	Engineering and Prototype Testing	Storm water diversion concepts discussed.
Region 08	Monitoring novel treatment technology for AMD at Captain Jack Mill site	Steve Dyment	Engineering	Ed Barth / John McKernan	513-569-7415	Steve Dyment	5/23/2017	In Progress	Bonita Peak	CO	Technical Advice, Education & Innovation	The TSC staff assigned to this request closely monitored the filling of the mine tunnel and resulting water quality. The monitoring program includes Electro Resistivity Tomography (ERT), In-situ water quality monitoring, and periodic collection of samples from surface water and groundwater wells in the vicinity of the tunnel.
Region 08	TDS Spreading, CO (non-SF)	Treasure Bailey	Engineering	Ed Barth / John McKernan	513-569-7415	Treasure Bailey	8/20/2017	In Progress	NW	CO	Technical Advice, Education & Innovation	Report review / conference call.
Region 09	Davis Chevrolet Navajo and Hopi site	Queenie Mungin-Davis, Rebecca Jamison, R9	Site Characterization and Monitoring	Felicia Barnett / Dale Werkema	404-562-8659	HQ UST	3/9/2017	On-Going	Tuba	AZ	Technical Advice, Education & Innovation	HQ UST on behalf of Region 9 asked for assistance in reviewing the Geophysical Dipole-Dipole Resistivity/Induced Polarization (IP) Report for this site. Generally, petroleum hydrocarbon plumes respond well to enhanced biological treatment; however this site has been extremely recalcitrant and has spread beneath to the much smaller nearby Hopi Tribal area. Review comments were provided on May 8, 2017. The geophysical review noted that it is evident that there are 3-dimensional geo-electrical changes within this site. The cause of the changes could be either geologic (i.e., permeability, porosity, fracture) or biogeochemical due to the contaminant. The dipole-dipole surveys were collected along transits and reported as 2D sections. Trying to correlate 1D well data with 2D geophysical data is difficult and inherently uncertain since this is a 4D problem (i.e., x, y, z and time). It was recommended that a multi-frequency electromagnetic induction survey to compliment and add to these results by providing a 3D representation of the conductivity of the subsurface, which possibly could map and characterize these geo-electrical variations at higher resolution and dimensions. Furthermore, since some data show iron reduction, there could be magnetic susceptibility changes within zones undergoing biomineralization so a high resolution cesium-vapor magnetic survey is recommended. At present it appears this site does not contain a broad plume, but rather fingers of higher concentrations within or near fractures surrounded by lower concentrations in the pore space adjacent to the fractures. Such a 3D investigation may help understand this distribution, correlate, and corroborate other subsurface investigations, and guide long-term remediation decisions and efforts.

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Region 09	El Paso Natural Gas Mine Sites in the Western Navajo Nation	ZiZi Searles / Sona Chilingaryan	Site Characterization and Monitoring	Felicia Barnett	404-562-8659	Region 09	12/3/2015	On-Going	Cameron	AZ	Technical Advice, Education & Innovation	Region 9 requested support from a statistician experienced with the specific issues associated with measuring the random events associated with detecting radioactivity and differentiating elevated radiation levels from background levels. The SCMTSC statistician is working closely with project health physicists (EPA and its contractors) in the development and reporting of specific tasks. The scope of work for assistance will vary depending on the phase of the project. SCMTSC provided the Region with Statistical methods to perform regression analysis and background evaluations on 2/29/16. Addressed statistical questions of another EPA contractor regarding developing background reference areas and selecting a reasonable achievable value for the correlation between field count data and lab data reported in pCi/mg. Performed correlation analysis on several data sets provided by the contractor working on behalf of EPA and assisted the contractor in developing a white paper, "Selection of Cleanup Level and its Affect on Final Status Survey." Reviewed and delivered a technical document, "Statistical Methods for the Work Plan - Western Navajo Nation Uranium Mines," summarizing statistical methods to be included in the work plan. Reviewed several documents prepared by EPNG and prepared preliminary statistical comment on the on-going work. The technical support will provide the Region with accurate characterization of the areas requiring remediation. SCMTSC proved review comments on the background correlation report documents for the site on 9/7/2017.
Region 09	Former Quivira Mine	Mark Ripperda	Site Characterization and Monitoring	Felicia Barnett	404-562-8659	Region 09	9/28/2016	On Hold	Church Rock	NM	Technical Advice, Education & Innovation	Region 9 is currently planning a removal effort to remediate the areas around four ventilation shafts (vent holes) associated with the former Quivira Mine (uranium) site located in the Church Rock, New Mexico. The SCMTSC was requested to provide statistical support during the following four phases: 1. Planning – providing consultations and review of the Design Reports including procedures and other documentation to determine the best technical approach to meet EPA's Data Quality Objective (DQOs) and Measurement Quality Objectives (MQOs). 2. Reviewing Data – providing review of data collected by EPA during and after implementation of the Removal Action. 3. Consultations – providing on-going consultations to EPA's and its other contractors during the work. 4. Report Deliverables – review and provide comments on the SAP and the Removal Action Report and assist with the statistical evaluation of the site-specific data as needed. The support will address concerns about correlation between field instrumentation and laboratory analytical results since clean up and worker safety are related to accurate field analysis. SCMTSC recommended the use of a robust regression analysis model to estimate excavation areas where enough sampling data is available. This will assist in limiting the need for additional sampling during the removal.

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Region 09	Hunter's Point	Lily Lee	Site Characterization and Monitoring	Felicia Barnett	404-562-8659	Region 09	2/8/2017	On-Going	San Francisco	CA	Technical Advice, Education & Innovation	The Navy's contractor was caught falsifying site data, and the Region requested assistance with oversight of the re-sampling and verification of the actual levels of contamination still remaining on the site. This falsification of the base closure data has delayed the turning over of the property for reuse by the city. SCMTSC has already provided initial review comments on the Navy's verification process. SCMTSC review indicates the potential for missing areas that may still need re-sampling to verify actual contamination and remediation. SCMTSC recommended a different approach using effective univariate and multivariate/multidimensional statistical and graphical methods to identify potential suspicious/anomalous patterns present in data sets collected from the various parcels of the Site. Graphical displays of the multivariate methods are extremely valuable. Effective pattern recognition graphical methods provide added insight into the patterns present in a data set which may not otherwise be possible to identify and comprehend based upon the information provided by test statistics. Proper re-characterization of the site will ensure that the remediation of the property meets protective standards for human health in this highly desirable reuse area.
Region 09	literature review for PFAS stabilization	Diana Cutt	Engineering	Ed Barth / John McKernan	513-569-7415	Diana Cutt	6/20/2017	In Progress	N/A	N/A	Technical Advice, Education & Innovation	Conducted literature review for potential project on PFAS stabilization.
Region 09	Microplastics	Harry Allen	Site Characterization and Monitoring	Felicia Barnett	404-562-8659	Region 09	6/21/2017	In Progress	NA	NA	Technical Advice, Education & Innovation	Region 9 Superfund is involved in 2+ removal and pre-remedial sites where co-exposure of hazardous substances in microplastics may contribute to overall human and eco-risk. Microplastics are common in aquatic environments (in soil and sediments) and are regularly ingested by animals, especially fish. Microplastics in aquatic systems are known to contain hydrophobic organic chemicals (PCBs, Pesticides, and additive flame retardants) as well as alkyphenols and trace metals in including mercury, and have been found to contain relatively high concentrations of hazardous substances including PCBs. Present estimates (e.g., particle count/volume with positive identification) of microplastics themselves have been inadequate and current estimation methods and approaches lack quality control and quality assurance. Region 9 has recently developed a definitive technique for counts in fish tissue and are developing same for sediment as part of an ORD RARE project. The Region will work with the SCMTSC to use existing and new microplastic particle count data to attempt robust estimations and identify shortcomings and gaps in the process (for example in the sampling plan). A data analysis approach and recommendations for water and sediment sampling plans is required. This can be in a simple report format with recommendations for statistical analysis steps, preferred software etc. EPA will employ these findings in developing of sampling plans in the 2+ regional superfund cases mentioned above. Results from the aforementioned ORD sediment microplastic RARE project will also require this data analysis approach.
Region 09	Montrose Superfund Site	Yarissa Martinez	Groundwater	David Burden	580-436-8606	Region 09	7/19/2017	Completed	Los Angeles	CA	Document Review	Dr. Eva Davis reviewed the "Revised Mobile DNAPL Boundary Confirmation Work Plan" for the Montrose Superfund Site, which includes a Sampling and Analysis Plan/Quality Assurance Project Plan and the Chemical Site Responses to March 2017 EPA Comments. It was recommended that the revised work plan be approved. Several deficiencies in the SAP/QAPP should be addressed before field work is initiated to delineate the pilot study boundary.

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Region 09	NA	Anna Marie Cook	Site Characterization and Monitoring	Chris Sibert John Zimmerman Brian Schumacher	702-798-2234	Region 09	9/11/2014	On-Going	NA		Technical Advice, Education & Innovation	SCMTSC is providing information on vapor intrusion (VI) support to the Region 9 VI workgroup.
Region 09	No site	Eric Koglin	Superfund Health Risk Assessment	Teresa Shannon	513-569-7596	Eric Koglin, Regio	9/13/2017	On-Going	NA	NA	Human Health Risk Assessment	Requestor wrote in with questions regarding Endosulfan and its removal action concentration. Forwarded onto STSC and a reference search was submitted to TIU. Requestor forwarded HED Risk Assessment of Endosulfan and request resolved. On-Going.
Region 09	Romic Palo Alto	Ron Leach	Engineering	Ed Barth / John McKernan	513-569-7415	Ron Leach	9/27/2017	In Progress	Palo Alto	CA	Document Review	Review pilot scale study, work plan, GW monitoring report jointly w Ada.
Region 09	Westinghouse	Mark Samolis	Site Characterization and Monitoring	Felicia Barnett	404-562-8659	Region 09	8/15/2017	Completed	Sunnyvale	CA	Document Review	SCMTSC performed a quick turn around review of the draft proposal for developing a confirmation sampling plan for the site. The sampling plan is intended to provide a level of statistical certainty that the soils at the site meet the cleanup criteria of less than 25 mg/kg for PCBs after remediation. Comments and suggestions for improving the plan were provided on 8/29/2017.
Region 10	Bunker Hill Lower Basin	Kira Lynch	Engineering	Ed Barth / John McKernan	513-569-7415	Kira Lynch	5/23/2017	In Progress	CdA	ID	Technical Advice, Education & Innovation	Assist with treatability studies to evaluate the performance of adding amendments to the thin layer wetlands capping study.
Region 10	Elmendorf-Richardson	Kira Lynch	Engineering	Ed Barth / John McKernan	513-569-7415	Kira Lynch	5/9/2017	In Progress	Anchorage	AK	Document Review	Ongoing EPA assessment of soil and water contamination at 30 sites on the base since 1991 and clean-up activities since 1995. The key findings of the document review note 4 main topic areas where improvements can be made in the overall remedial approach, (1) a re-evaluation of the presence of light non-aqueous phase liquids (LNAPL) and the LNAPL product recovery efforts, (2) additional site characterization and ground water monitoring well infrastructure, (3) advancements in the design of the in-situ chemical oxidation (ISCO) system, (4) and expanded remedial technology treatment performance monitoring.
Region 10	Gay mine	Joe Wallace	Site Characterization and Monitoring	Felicia Barnett	404-562-8659	Region 10	12/1/2016	On Hold	Fort Hall Indian Reservation	ID	Technical Advice, Education & Innovation	SCMTSC has been asked to assist Region 10 with stochastic assessment of sampling adequacy/frequency for the site and define acceptable levels of uncertainty for areas not sampled. SCMTSC has reviewed site data and identified and bracketed critical statistical elements required for the sampling and risk assessment. This has necessitated further Regional discussion on planning needs. Armed with this clarifying information, the Region is assessing how to establish those statistical variables which can then be used to guide necessary additional data collection. Once the Region has determined a rationale supporting the selection of defensible RMEs, COVs, and UCLs using the information from the SCMTSC analysis, SCMTSC will respond to any additional concerns the region has in developing a statistical sampling process to support the site investigation and address uncertainty related to the site sampling plan.

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Region 10	Joint Base Elmendorf-Richardson	Sandra Halsted	Groundwater	David Burden	580-436-8606	Region 10	6/6/2017	Completed	Anchorage	AK	Document Review	Dr. Scott Huling (NRMRL) provided technical review comments to Sandra Halstead, Superfund Site Manager on the "Elmendorf-Richardson, AK, ST041 Four Million Gallon Hill Treatability Study Work Plan, Draft (May, 2017)". The work plan establishes the basis upon which to develop an improved treatability study work plan. There are several important issues regarding the lack of sufficient site characterization data and information to support the pilot-scale study. The location and magnitude of the petroleum fuel contamination raises uncertainties and may prevent the success of in situ remediation technologies, and prevent the ability to assess the treatment performance of these technologies at pilot-scale. Consequently, at the end of the pilot-scale study period, a decision regarding full-scale remedial deployment will be difficult due to the uncertainties.
Region 10	Lower Duwamish Waterway	Elly Hale	Site Characterization and Monitoring	Felicia Barnett	404-562-8659	Region 10	1/5/2017	On-Going	Seattle	WA	Document Review	SCMTSC is providing statistical assistance with sampling approach - through discussion, possibly limited review of PRP documents. Currently have PRP-developed sampling approach with statistical basis, and EPA comments. Suitable statistical approach needs to be resolved. SCMTSC provided comments on the approach and assisted the Region with discussions with the PRP. OLEM requested that an additional trend analysis be performed on the PRP's proposed sampling to calculate what magnitude will be able to be detected in each media with a confidence of 90% and a power of 80%. The request was clarified to be sure that the correct trend information will be supplied to OLEM and additional work is underway. The Region and OLEM will use the analysis to determine if the sampling proposal is adequate or additional sampling should be contained in the plan
Region 10	Phase 3 Water Well Sampling Results	Kira Lynch	Engineering	Ed Barth / John McKernan	513-569-7415	Kira Lynch	3/20/2017	In Progress	Fairchild AFB	WA	Document Review	Dr. Carolyn Acheson provided a review of the sampling and analysis plan from the USAF for PFAS sampling proposed for the base. Carolyn asked for additional sampling metrics and plans to better evaluate the presence and concentrations of PFAS.
Region 10	Upper Columbia River Project, Soil Amendment Study	Kira Lynch	Engineering	Ed Barth / John McKernan	513-569-7415	Kira Lynch	5/23/2017	In Progress	Kettle Falls	WA	Technical Advice, Education & Innovation	Reducing bioaccessibility of lead in soil by chemical sequestration; Reducing lead mobility and leachability in soil by increasing soil pH; Increasing vegetative cover in a manner that reduces the potential for direct human exposure and reduces erosion and transport of affected soil; Increasing the thickness of the humus barrier over the lead-bearing soil; and 2/3 Improving soil structure in a manner that reduces the potential for erosion and transport of affected soils.
Region 10	Wyckoff / Eagle Harbor	Helen Bottcher	Site Characterization and Monitoring	Chris Sibert /Dale Werkema	702-798-2234	Region 10	11/7/2016	On-Going	Bainbridge Island in Central Puget Sound	WA	Document Review	SCMTSC has been asked to assist in reviewing a sampling plan and results for the use of a marine induced polarization sampling method at the site. Region 10 is preparing to collect another round of samples on the surface of the cap, and some shallow cores early 2017 and plans to test the method the same week to compare the results. If the results are proven comparable, marine induced polarization sampling could be an option as a "first sweep" sampling tool for assessing the condition of the subtidal cap at the site. The cap is large – more than 70 acres – and sampling and analytical chemistry costs to show that it remains protective is expensive. If this tool, along with bathymetry data, could be used to assess the long term functioning of the cap , it would provide a significant cost saving for monitoring the cap's effectiveness.

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(3) Completed	A technical support request has been submitted and a response has been provided to the Region or Program Office. No further assistance on this site is anticipated at this time.
(4) On-Going	A technical support request has been submitted and a response has been provided to the Region or Program Office, however the Region/Program Office and/or the TSC anticipates further assistance will be needed on this site/issue in the near future.

Multi-region requests are shown under each of the requesting regions.

Program / Regional Office	Site Name	Program / Regional Office Contact	Technical Support Center	Center Contact	Center Contact Phone	Requestor	Request Date	Status	City	State	Support Type	Description
Region 10		Andrea LaTier	Ecological Risk Assessment	Mike Kravitz	513-569-7740	Sharon Thoms (R04) Glenn Adams (R04) Bruce Duncan (R10)	10/5/2017	On-Going			Environmental Risk Assessment	Question: "Geochemical Evaluations–Statistics or no Statistics?" Response Document Title: Separating Anthropogenic Metals Contamination from Background: A Critical Review of Geochemical Evaluations and Proposal of Alternative Methodology. Status Update: Response document is in final preparation (i.e., External peer review was completed. Comments are being addressed.).
Region 10		Andrea LaTier	Ecological Risk Assessment	Mike Kravitz	513-569-7740	Jean Zodrow (R1	10/5/2017	On-Going			Environmental Risk Assessment	Question: Developing a tool to understand and assess the bioavailability of contaminants in soils. Response Document Title: Terrestrial Metals Bioavailability: A Literature Derived Decision Rule for Ecological Risk Assessment. Status Update: External Review Draft is completed.